Water from the Colorado River was not diverted for use in Moab-Spanish Valley prior to 1971, other than for the Atlas mill (Sumsion 1971). Domestic and public drinking water supplies are obtained from ground water, streams, and springs. In Utah, use of Colorado River water for purposes other than recreation is limited. In Grand County downstream from Moab, water is withdrawn from the river for irrigation of about 100 to 150 acres of hay and small grains, and a water right for consumptive use of 3 cfs is held for operations at Potash. No additional water withdrawals are believed to occur in Utah, including Canyonlands National Park and Lake Powell (NRC 1999). The Colorado River in the vicinity of Moab is used for swimming, rafting, boating, and fishing as well as other forms of recreation and is a recognized scenic waterway. The stretch of the river adjacent to the site is within the area designated as critical habitat for four endangered species of fish. For further details, see Section 3.1.10, "Aquatic Ecology."

3.1.7.5 Surface Water Quality Criteria

Five contaminants of concern in the surface water have been identified, as described in Section 3.1.7.3 (Site-Related Surface Water Contamination) and Appendix A2. There are no EPA surface water standards in 40 CFR 192. However, UMTRCA requires DOE to determine applicable regulations in consultation with the State of Utah. Surface water quality criteria for the protection of aquatic species have been developed in Appendix A2 for these contaminants of concern. The criteria for ammonia and copper are consistent with the standards currently specified in the Utah Administrative Code R317-2. In the case of ammonia, the State of Utah is in the process of updating its standards to be consistent with the current Ambient Water Quality Criteria published by EPA. Suter and Tsao (1996) were used where state and federal standards were not available. There are no federal or State of Utah standards for uranium or sulfate. Suter and Tsao developed estimated lowest chronic uranium values for fish extrapolated from laboratory studies. The lowest chronic value is considered conservative in comparison to results of studies on swim-up fry and juvenile Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), and bonytail (*Gila elegans*) (Hamilton 1995). Sulfate was retained as a contaminant of concern because concentrations are elevated when levels of other contaminants of concern are also elevated. Table 3–8 summarizes the protective criteria for each contaminant of concern.

3.1.8 Floodplains

The 100-year floodplains for Moab Wash and the Colorado River and the 500-year floodplain of the Colorado River occupy more than one-third of the Moab site (Figure 3–16). The Colorado River floodplains extend the length of the eastern site boundary from the river's edge to distances ranging from 500 to 1,200 ft west and are approximately 10 ft above the average river level. The tailings impoundment is located within the 100- and 500-year floodplains of the Colorado River and within the floodplain of the PMF. Two dams upstream of the Moab site affect the flow of the Colorado River: Blue Mesa Dam on the Gunnison River and McPhee Dam on the Dolores River.

Table 3–8. Summary of Surface Water Quality Criteria for Aquatic Species

Contaminant of Concern	Protective Acute Criteria (mg/L)	Protective Chronic Criteria (mg/L)	Source of Criteria
Ammonia	1.5 – 41.7[a]	0.17 – 4.13[b]	NRWQC; EPA 1999[c]
Copper	0.013[d,e]	0.009[d,e]	NRWQC; EPA 2002[f]
Manganese	2.3	1.78	Suter and Tsao 1996
Sulfate	N/A	N/A	No published criteria
Uranium	0.142	0.142	Suter and Tsao 1996

[a]Criteria are pH and life-stage dependent; early life stages are assumed to be present, and salmonids are assumed to be absent; range represents calculated criteria based on measured range of surface water pH values at the Moab site from 2000 to 2002 (Appendix D, SOWP; DOE 2003).
[b]Criteria are pH, temperature, and life-stage dependent; early life stages are assumed to be present and salmonids are assumed to be absent; range of values represents calculated criteria based on measured range of surface water pH values and temperature at the Moab site from 2000 to 2002 (Appendix D, SOWP; DOE 2003).
[c]National Recommended Water Quality Criteria (NRWQC) are based on EPA's ambient water quality criteria (EPA 1999).
[d]Criteria for metals are expressed in terms of dissolved metals in the water column.
[e]Criteria are expressed as a function of hardness (milligrams per liter) in the water column. The value listed corresponds to a hardness of 100 mg/L.
[f]National Recommended Water Quality Criteria are based on EPA's criteria (EPA 2002).
N/A = not available; no published criteria available. Note: measured background sulfate concentrations in the surface water range from 84 to 439 mg/L.

Because of terracing and lack of river access during regular high-flow events (less than 5-year occurrence), the floodplain is not considered an "active" floodplain. Most of the surface has been disturbed in the past by milling and soil borrow operations. Some areas are sparsely vegetated, and other areas are dominated by tamarisk. A small patch of mature cottonwoods exists in the northeastern portion of the site.

Courthouse Wash drains 102 square miles and empties into the Colorado River immediately upstream of the Moab site. Moab Wash, which drains approximately 5 square miles, runs through the middle of the site to the Colorado River.

Appendix F, "Floodplain and Wetlands Assessment for Remedial Action at the Moab Site," includes a more detailed description of floodplains at the Moab site.

3.1.9 Wetlands

Several areas below the tamarisk next to the Colorado River were investigated in February 2002 and were found to contain wetland plants and soils. Although their boundaries have not been formally delineated, these areas are jurisdictional wetlands. Neither the tamarisk areas or the vegetated margin of a holding pond for irrigation water qualify as wetlands.

The Matheson Wetlands Preserve, across the river from the Moab site, has a variety of wetland types that include emergent wetlands, shrub wetlands, cottonwood stands, and ponds. This 875-acre preserve contains the only sizable wetland remaining on the Colorado River in Utah. Appendix F includes a more detailed description of wetlands at the Moab site.

No wetlands are known to exist at any vicinity properties, but because desert environments often contain small, isolated wetlands, these properties would be examined for wetlands prior to construction.